An overview of mistletoes on hardwoods in California

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Mistletoes

- Green, flowering, perennial plants
- Parasites on hardwoods and conifers
- Require living host
- Seeds possess a viscid layer

Leafy mistletoes
- leaves contain chlorophyll
- primarily water parasites
- plants in large clusters
## Mistletoe species on hardwoods in California

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<th>Species</th>
<th>Common name</th>
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<td><em>Phoradendron villosum</em></td>
<td>Oak mistletoe</td>
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<td><em>Phoradendron macrophyllum</em></td>
<td>Big-leaf mistletoe</td>
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<td><em>Phoradendron californicum</em></td>
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<td><em>Viscum album</em></td>
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Phoradendron villosum, oak mistletoe

Hosts: Primarily oaks, occasionally other hardwoods, native and introduced

ID: oval leaves with dense short hairs
**Phoradendron macrophyllum**, big-leaf mistletoe

**Hosts:** Many native and introduced hardwoods, including **black walnut**, **buckeye**, **Modesto ash**, **cottonwood**, **locust**, **maple**, **sycamore**, **willow**, **fruit** and **nut trees**.

*Common in riparian areas*

*Not on oaks*

**ID:** smooth oval leaves
**Phoradendron californicum, desert mistletoe**

**Hosts:** Primarily Pea family including acacia, palo verde, ironwood, mesquite. Also creosote bush, jojoba

**ID:** scale-like leaves, reddish-green, in drooping clusters
Viscum album, European mistletoe

Hosts: Many native and introduced hardwoods, including apple, black locust, cottonwood, maple, willow

Not on oaks

ID: long narrow leaves on long thin stems

Only within ± 5 mile radius of Sebastopol
Leafy Mistletoe Biology

• Separate male and female plants
• Female flowers produce berries
• Birds ingest berries, spread seeds
• Seeds adhere to branches
Development of infection

- Specialized structure penetrates host bark
- Root-like structure develops in host tissue
- Aerial shoots develop
Important component of woodland and desert ecosystems

- Berries eaten by birds
- Nectar, pollen food for insects
- Leaves eaten by deer, elk in winter
- Decay resulting from infection provides habitat
Impacts of mistletoe infection

- Sufficient water = tolerance
- Dieback of branches common
- Drought exacerbates effects
- Greatest impact on old, heavily infected trees
- Entry court for decay fungi

D. Shaw

P. Zambino
Management in developed settings

Issues
• High-value trees
• Tree vigor and survival
• Hazard due to failure of stems and branches

Management Options
• Remove mistletoe shoots physically or chemically
• Prune small infected branches
• Remove branches with significant decay over a target
• Remove declining or severely decayed trees
• Plant resistant species
Pruning

For lightly infected trees

Combine with shoot removal

Excessive pruning may destroy tree structure and vigor

Pruning wounds an entry court for decay fungi

Re-infection likely
Chemicals to control mistletoe
• ethephon (Florel™)
• glyphosate

Wrapping
• used to prevent sprouting
• black plastic, duct tape, etc
Management in forests and woodlands

Issues
- Stand vigor and survival
- Ecosystem function
- Expense

Management Options
- Favor resistant species in mixed stands
- Underburning?
- Regeneration
Thank You

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Larry Costello, UC Cooperative Extension
Bruce Hagen, CalFIRE, Retired
Ted Swiecki, Phytosphere Research
Paul Zambino, USFS Forest Health Protection, San Bernadino